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Title: POINTS OF STANDARD: ALLOY TOOL STEEL; HIGH-SPEED TOOL STEEL
(USSR)

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PORTIONS OF STANDARDS: ALLOY TOOL STEEL; HIGH-SPEED TOOL STEEL

OST 14958-39

replaces OST VES 4950

ALLOY TOOL STEEL

Classification and Specifications

This standard covers tool steels differing from ordinary carbon tool steel by a higher silicon or manganese content or by the presence of one or several alloying elements such as chromium, wolfram, molybdenum, vanadium, nickel and others.

A. CLASSIFICATION

The following grades of alloy tool steel are established according to their chemical composition

Table 1

Type of steel	Grade of steel	Chemical Composition, %				
		Carbon	Manganese	Silicon	Chromium	Wolfram Vanadium Molybdenum
Chromium Steel	Kh 12					
	Kh 12M					
	Kh G					
	Kh					
	Kh 09					
	9 Kh					
	Kh 05					
	7 Kh 3					
	8 Kh 3					

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Type of steel	Grade of steel	Chemical Composition, %						
		Carbon	Manganese	Silicon	Chromium	Wolfram	Vanadium	Molybdenum
Chromium -	9 Kh S							
Silicon	h Kh S							
Steel								
Vanadium								
Steel	F							
Chromium -								
Vanadium	6 Kh F							
Steel								
Wolfram	V 1						0.15-0.30	by buyer's request
Steel								
	V 2							
	3 Kh V 2							
Chromium -	Kh V 5						0.15-0.30	by buyer's request
Wolfram								
Steel								
	h Kh V S							
	5 Kh V S							
	6 Kh V S							
	Kh V G							
	9 Kh V G							
	5 Kh V G							
Silicon -								
Wolfram	8 S V M							
Steel								

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Type of steel	Grade of steel	Chemical Composition, %					
		Carbon	Manganese	Silicon	Chromium	Tungsten	Molybdenum
Chromium -	5 Kh H K						
Nickel	6 Kh H K						
Steel							
Chromium -	5 Kh G K						
Manganese							
Steel							

Developed by "Elektrostal" plant

Approved

Effective

Proposed by "Elektrostal"

31 Oct 1939

Jan 1, 1940

Page 2 of the document with paragraphs 2-8 is missing.

9. By buyer's request, hardness test of the steel is conducted after hardening, whereupon the hardness must satisfy requirements given in Table 2.

Table 2

Grade of Steel	Brinnell Hardness Number	Diameter of Indentation at D = 10 mm and P = 3000 kg	Hardening Temperature and Quenching Medium	Rockwell Hardness No. at least.
Kh 12			950-1000/oil	
Kh 12 M			/oil	
Kh G			/oil	
Kh			/oil	
Kh 09			/oil	
9 Kh			/oil	
Kh 05			/oil	

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Grade of Steel	Brinell Hardness Number	Diameter of Indentation at D = 10 mm and P = 3000 kg	Hardening Temperature and Quenching Medium	Rockwell Hardness No., at least.
7 Kh 3			/oil	
8 Kh 3			/oil	
9 Kh 3			/oil	
4 Kh 3			/oil	
F			/oil	
8 Kh F			/water	
V 1			/water	
V 2			/water	
V 2*			-	
3 Kh V 8			/oil	
Kh V 5			/water	
Kh V 5**			-	
4 Kh V S			/water	
5 Kh V S			/oil	
6 Kh V S			-900/oil	
Kh V G			/oil	
9 Kh V G			/oil	
5 Kh V G			/oil	
8 S V N			/oil	
5 Kh N M			/oil	
6 Kh N M			/oil	
5 Kh G M			/oil	

*For saws

**For strips and squares

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NOTE: For grades 5 Kh V G and 5 Kh G R the hardening temperature and hardness after quenching are approximate.

D. ACCEPTANCE REGULATIONS

I. Sampling and delivery conditions.

10. The producing plant is obliged to issue a certificate for each lot of steel, certifying that steel quality is in conformity with the requirements of this standard (see GOST 9957-75).

If number of standard is missing.

ON WITH 1112

Replaces GOST 9957-75

HIGH-SPEED TOOL STEEL

Classification and Specifications

1. This standard covers hot-rolled, forged and cold-drawn steel used for making various high-productive tools with high wearability; these tools have to maintain their cutting qualities on heating during operation approximately to 600°C.

I. Classification

2. The following grades of high-speed are established according to their chemical composition:

Table 1

Chemical Composition, %	Grades of Steel				R	RO
	5Kh5	5Kh2	5Kh1			
Carbon						
Wolfram						

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Chemical Composition, %	Grades of Steel			R	RO
	PK5	PF2	FF1		
Vanadium					
Cobalt					
Molybdenum	0.3	0.3			
	(Buyer's request)	(Buyer's request)	(Buyer's request)		
Chromium					
Manganese					
Silicon					
Nickel					
Sulfur					
Phosphorus					

Notes:

1. Composition, given in Table I, for grade PF2, is tentative. It may be changed in respect to carbon by agreement between producer and consumer.
2. If a consumer needs steel with narrower variation in the content of separate elements, these variations being within the limits of this standard, the question of chemical composition has to be decided by agreement between both participants of a contract.
3. Steel of grade RO (lower quality as compared to grade R) is to be produced only upon special orders by the consumer.

II. Specifications

3. State of product. High-speed steel must be delivered in annealed state.
4. Chemical composition of steel must conform with one of the grades, indicated in classification table, and be in accordance with consumer's order.

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5. Shape and cross-section of the bars of hot-rolled steel must satisfy order and be in conformity with effective standards for grades of tool steels.

NOTE: Cold-drawn and hot-rolled steels of shapes, for which no All-Union standards have yet been established, may be manufactured according to plant practice or by agreement between both parties of contract.

Bars must be straight, without any easily noticeable twist. Ends must be cut off evenly.

6. Appearance. The bar surface of hot-rolled and cold-drawn steels should not have cracks, laps, flaws, hair cracks or other surface defects, the depth of which will decrease cross-sectional dimensions by more than half of the tolerance for this particular dimension after removal of such defects. No defects are permissible on the surface of ground steel (silver steel).

7. Fracture must be uniform, fine-grained and without shiny spots. No voids, bubbles, slag inclusions or foreign interlayers must show in the fracture.

Proposed by Glavspetsstal' approved 27 Oct 1937 Effective 1 Jan 1938.

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